



Agency for Healthcare Research and Quality  
Advancing Excellence in Health Care



NATIONAL  
**GUIDELINE**  
CLEARINGHOUSE

## General

### Guideline Title

Elbow disorders.

### Bibliographic Source(s)

Elbow disorders. In: Hegmann KT, editor(s). Occupational medicine practice guidelines. Evaluation and management of common health problems and functional recovery in workers. 3rd ed. Elk Grove Village (IL): American College of Occupational and Environmental Medicine (ACOEM); 2012. p. 1-169. [535 references]

### Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: American College of Occupational and Environmental Medicine (ACOEM). Elbow disorders. Elk Grove Village (IL): American College of Occupational and Environmental Medicine (ACOEM); 2007. 67 p. [122 references]

## Regulatory Alert

### FDA Warning/Regulatory Alert

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- [March 22, 2016 – Opioid pain medicines](#) : The U.S. Food and Drug Administration (FDA) is warning about several safety issues with the entire class of opioid pain medicines. These safety risks are potentially harmful interactions with numerous other medications, problems with the adrenal glands, and decreased sex hormone levels. They are requiring changes to the labels of all opioid drugs to warn about these risks.

## Recommendations

### Major Recommendations

Definitions for the strength of evidence ratings (A, B, C, and I) and the criteria for evidence-based recommendations are presented at the end of the "Major Recommendations" field.

## Summary of Recommendations and Evidence

All chapters include analyses of numerous interventions, whether or not they are approved by the U.S. Food and Drug Administration (FDA). For non-FDA-approved interventions, recommendations are based on the available evidence. This is not an endorsement of their use. Many of the medications recommended are utilized off-label. The following is a general summary of the recommendations contained in this chapter:

### *Evaluation and Diagnostic Issues*

- The elbow joint should be carefully evaluated with a history, physical examination, and focused diagnostic testing. A complete physical examination is recommended, since pain can be referred from the neck, shoulder, or chest.
- The initial elbow examination or consultation of patients with acute, subacute or chronic elbow symptoms should focus on detecting both remedial conditions and any red flags for alternate conditions. The presence of red flags generally requires either urgent testing and treatment or referral for appropriate care.
- In the absence of red flags, the health care provider should prescribe efficacious treatments, monitoring patients for complications, facilitating the healing process, and returning the individual to modified alternative or full-duty work.
- Initial evaluation of elbow joint pain only requires elbow x-rays in some cases depending on history and presentation. X-rays of the neck and shoulder may also be indicated in certain circumstances.
- Diagnostic ultrasound is seldom necessary. However, it may be helpful in select cases involving biceps tendinosis, severe strains, or refractory epicondylalgia.
- Magnetic resonance imaging (MRI) is particularly helpful for diagnosing osteonecrosis, biceps tendinosis, and biceps tears.
- Computed tomography (CT) scanning may be helpful in evaluating the patient with a traumatic elbow dislocation or arthroplasty-associated recurrent dislocation.

### *Patient Education Issues*

- Patient education is best accomplished if similar advice is given by all health care team members.
- Patients need reassurance that elbow pain is common and generally resolves with time.
- Occupational and activity modifications are often helpful.
- Biceps tendinosis generally responds well to non-operative management. Serious biceps tears usually require surgical repairs and the majority of patients regain full function. Partial tears require judgment regarding whether operative or non-operative approaches are likely to result in better outcomes for a patient. The need for surgery is thought to increase with the size of the tear.
- Olecranon bursitis and epicondylalgia are common and usually resolve completely.
- Pronator syndrome, radial, and ulnar neuropathies generally have a good prognosis, although some cases require surgery.
- Fractures and dislocations require urgent treatment, and many (especially radial head fractures) have good prognoses. Alternately, complex or compound fractures may have poor prognoses.
- Osteoarthritis generally responds to treatment with non-steroidal anti-inflammatory drugs (NSAIDs) or acetaminophen.
- Patients should be encouraged to maintain a high level of function; however, modifications may be helpful in reducing stresses to the elbow.
- Rest and immobilization are discouraged in the management of elbow disorders other than fractures, as they usually cause further disability and prolong treatment.

### *Occupational Issues*

- Patients with elbow fractures may require more time off work, especially if one-handed work is unavailable. In general however, patients should be encouraged to return to normal activity or work as soon as possible. Some situations require modified duty. However, the more activities are reduced, the more time generally required to rehabilitate the patient.
- If elbow pain is present, reduced activity may be necessary if the physical requirements of the job exceed the patient's tolerance.
- Modification of offending or aggravating activity(ies) may require consultation with a qualified professional trained in ergonomic analysis, particularly in the setting of high job-physical demands, especially high force combined with high repetition.
- Work technique may need to be changed to address, for example, excessive grip force or sustained wrist extension.
- Ergonomic biomechanical advice on the efficient use of the elbow may be helpful. For example, with lateral epicondylalgia, it may help to lift with palm up and not palm down to reduce stress on the lateral elbow (caused by resisted wrist extension). For medial epicondylalgia, it may be helpful to lift palm down to reduce stress on the medial elbow (caused by resisted wrist flexion).
- A functional capacity evaluation (FCE) can establish appropriate physical capacity for work although results should be interpreted with caution and testing should be preferably conducted by a health professional (e.g., occupational or physical therapist) well experienced in dealing with patients who may self-limit due to pain. Non-physical factors, return to work programs and participatory ergonomics, should be addressed as needed. Empower patients to accept responsibility for managing their recovery.

- Elbow straps (proximal forearm epicondylitis bands) may be helpful for epicondylalgia.
- Wrist splints are often helpful for patients with radial neuropathies and pronator syndrome. Some providers also prescribe wrist splints for lateral epicondylalgia.
- When immobilization is utilized, range-of-motion exercises should usually involve the elbow, wrist, and shoulder to avoid adhesive capsulitis ("frozen shoulder").
- Elbow braces are commonly prescribed for nocturnal use in patients with ulnar neuropathy at the elbow.
- Ice, heat, ultrasound, and other similar modalities are sometimes used for elbow pain in the clinical setting.
- Consider heat and ice as a part of self care at home, particularly in the acute pain setting. Heat/ice should provide temporary relief of symptoms, but can reinforce pain and illness behaviors in persons with chronic pain. While many believe heat is not indicated in the acute phase of many injuries, acute low back pain has been demonstrated to be successfully treated with heat. Quality evidence is lacking to oppose the use of heat for acute injuries.
- There is no evidence to support prolonged and repetitive use of allied health therapies (e.g., massage, electrical therapies, manipulation, and acupuncture). Long-term treatment, particularly if there is no documentation of functional improvement, is not indicated in managing patients with chronic pain.

#### *Exercise Issues*

- Graded exercises to assist in achieving a return to normal function are indicated.
- Gentle exercises are useful to regain normal range of motion in the acute pain and post-operative settings. Aggressive stretching may be contraindicated if symptoms are aggravated. It is also important for patients to understand that while exercises after surgery can have some discomfort, they should not experience significant increase in pain or new onset of swelling.
- Quality studies of exercises for treatment for elbow disorders are lacking. By inference from studies of many other musculoskeletal disorders (MSDs), conditioning, aerobic and strengthening exercises are likely most helpful for the rehabilitation of most chronic elbow pain conditions. Consultation with a physical or occupational therapist to determine the most appropriate exercises for the patient is in order.

#### *Medications*

- Initial management of most elbow pain conditions is with NSAIDs and acetaminophen.
- Topical NSAIDs are effective for epicondylalgia.
- Opioids should be avoided for most patients. Opioids might be needed for managing select patients with acute trauma during the initial post-injury period.
- Glucocorticoid injections are indicated for select use in patients with epicondylalgia, particularly if other treatments have been unsuccessful.

#### *Other Issues*

- If significant symptoms causing self-limitations or restrictions persist beyond 4 to 6 weeks, referral for specialty evaluation (e.g., occupational medicine, physical medicine and rehabilitation, or orthopaedic surgery) may be indicated to assist in confirming the provisional diagnosis and in determining further management.
- Non-physical factors (i.e., psychiatric, psychosocial, workplace, or socioeconomic issues) should be investigated and addressed, particularly in cases of delayed recovery or delayed return to work. These factors are often not overt and specific inquiries are required to identify these issues.

It is important to note that many of these conditions, particularly lateral epicondylalgia ("epicondylitis") and other tendinoses, tend to resolve spontaneously (e.g., see "wait and see" groups within studies of corticosteroid injections). Thus, in evaluating research studies, including prospective studies that do not include a placebo control, caution should be exerted as results may be interpreted as showing benefit even when there is not true improvement from the therapy beyond normal spontaneous resolution.

#### *Summary Tables: Recommendations and Evidence*

Table 1 summarizes the recommendations from the Evidence-based Practice Elbow Panel for diagnostic testing for elbow disorders. Table 2 is a summary of recommendations for managing these disorders. Table 3 summarizes the recommendations for using ergonomic interventions and return-to-work programs. The recommendations are based on critically appraised higher quality research evidence and on expert consensus observing First Principles when higher quality evidence was unavailable or inconsistent. The reader is cautioned to utilize the more detailed indications, specific appropriate diagnoses, temporal sequencing, prior testing or treatment, and contraindications that are elaborated in more detail for each test or treatment in the body of this Guideline in using these recommendations in clinical practice or medical management. These recommendations are not simple "yes/no" criteria, and the evidence supporting them is in nearly all circumstances developed from typical patients,

not unusual situations or exceptions.

Recommendations are made under the following categories:

- Strongly Recommended, "A" Level
- Moderately Recommended, "B" Level
- Recommended, "C" Level
- Insufficient-Recommended (Consensus-based), "I" Level
- Insufficient-No Recommendation (Consensus-based), "I" Level
- Insufficient-Not Recommended (Consensus-based), "I" Level
- Not Recommended, "C" Level
- Moderately Not Recommended, "B" Level
- Strongly Not Recommended, "A" Level

Table 1. Summary of Recommendations for Diagnostic and Other Testing for Elbow Disorders

Test	Recommendation(s)
Antibodies	<p>Antibody levels to evaluate and diagnose patients with elbow pain that have reasonable suspicion of rheumatological disorder – Recommended, Insufficient Evidence (I).</p> <p>Antibody levels as a screen to confirm specific disorders (e.g., rheumatoid arthritis) – Strongly Recommended, Evidence (A)</p>
Elbow Arthroscopy	<p>Arthroscopy to evaluate and diagnose patients with elbow pain that have suspicion of intraarticular body, and other subacute or chronic mechanical symptoms – Recommended, Insufficient Evidence (I)</p> <p>Arthroscopy for diagnosing acute elbow pain – Not Recommended, Insufficient Evidence (I)</p> <p>Arthroscopy for diagnosis or treatment in acute, subacute, or chronic patients with osteoarthrosis in the absence of a remediable mechanical defect such as symptomatic loose body – Not Recommended, Insufficient Evidence (I)</p> <p>Arthroscopy with chondroplasty for treatment of osteoarthrosis – Not Recommended, Insufficient Evidence (I)</p>
Bone Scans	<p>Bone scanning for select use in acute, subacute or chronic elbow pain to assist in the diagnosis of osteonecrosis, neoplasms and other conditions with increased polyostotic bone metabolism, particularly where there is more than one joint to be evaluated – Recommended, Insufficient Evidence (I)</p> <p>Bone scanning for routine use in elbow joint evaluations – Not Recommended, Insufficient Evidence (I)</p>
Computerized Tomography (CT)	<p>Routine CT for evaluation of acute, subacute, or chronic elbow pain – Not Recommended, Insufficient Evidence (I)</p> <p>CT for evaluating patients with osteonecrosis or following traumatic dislocations or arthroplasty-associated recurrent dislocations – Recommended, Insufficient Evidence (I)</p> <p>CT for those with need for advanced imaging but have contraindications for MRI – Recommended, Insufficient Evidence (I)</p> <p>Helical CT for select patients with acute, subacute or chronic elbow pain in whom advanced imaging of bony structures is thought to be potentially helpful – Recommended, Insufficient Evidence (I)</p>
C-Reactive Protein, Erythrocyte Sedimentation Rate, and Other Non-Specific Inflammatory Markers	<p>Erythrocyte sedimentation rate and other inflammatory markers for screening for inflammatory disorders or prosthetic sepsis with reasonable suspicion of inflammatory disorder in patients with subacute or chronic elbow pain – Recommended, Insufficient Evidence (I). Ordering of a large, diverse array of anti-inflammatory markers without targeting a few specific disorders diagnostically is not recommended.</p>

Test Electromyography and Nerve Conduction Studies (Electrodiagnostic Studies [EDS])	<p>Recommendation(s)</p> <p>EDS to assist in the diagnosis of subacute or chronic peripheral nerve entrapments, including ulnar neuropathies, radial neuropathies and median neuropathies – Recommended, Insufficient Evidence (I)</p> <p>Quality EDS to assist in securing a firm diagnosis for those patients without a clear diagnosis – Recommended, Insufficient Evidence (I)</p> <p>EDS as one of two methods to attempt to objectively secure a diagnosis prior to surgical release – Recommended, Insufficient Evidence (I)</p> <p>EDS for initial evaluation of most patients as it does not change the management of the condition – Not Recommended, Insufficient Evidence (I)</p>
Magnetic Resonance Imaging (MRI)	<p>MRI for diagnosing osteonecrosis – Recommended, Insufficient Evidence (I)</p> <p>MRI for routine evaluation of acute, subacute, or chronic elbow joint pathology, including degenerative joint disease – Not Recommended, Insufficient Evidence (I)</p> <p>MRI for evaluation of biceps tendinosis or ruptures – Recommended, Insufficient Evidence (I)</p>
X-rays	<p>X-rays for evaluation of acute, subacute or chronic elbow pain – Recommended, Insufficient Evidence (I)</p> <p>X-rays to rule out osteomyelitis or joint effusion in cases of significant septic olecranon bursitis – Recommended, Insufficient Evidence (I)</p> <p>X-rays that include at least 2-3 views to diagnose elbow fractures – Recommended, Insufficient Evidence (I)</p> <p>X-rays that include at least 2-3 views for elbow dislocation to rule-out fractures – Recommended, Insufficient Evidence (I). Repeat x-rays after reduction are also recommended.</p> <p>For elbow sprains, x-rays that include at least 2-3 views to rule-out fractures – Recommended, Insufficient Evidence (I). Repeat x-rays are also recommended if there is failure to improve as clinically expected over approximately a week.</p> <p>X-rays for biceps tendinosis or ruptures – Recommended, Insufficient Evidence (I)</p>
Single Proton Emission Computed Tomography (SPECT) and Positron Emission Tomography (PET)	<p>SPECT and PET for diagnosing acute, subacute or chronic elbow pain – Not Recommended, Insufficient Evidence (I)</p>
Ultrasound	<p>Diagnostic ultrasound for the evaluation and diagnosis of biceps tendinosis or ruptures – Recommended, Insufficient Evidence (I)</p> <p>Diagnostic ultrasound for the evaluation and diagnosis of other elbow disorders, including osteonecrosis, osteoarthritis, dysplasia, and fractures – No Recommendation, Insufficient Evidence (I)</p> <p>Diagnostic ultrasound for the evaluation and diagnosis of ulnar neuropathies at the elbow – No Recommendation, Insufficient Evidence (I)</p>
Gram Stain and Culture and Sensitivity	<p>Aspiration of the fluid and analyses including Gram stain and culture and sensitivity to determine infection for olecranon bursitis – Recommended, Insufficient Evidence (I)</p>

Table 2. Summary of Recommendations for Managing Elbow Disorders

Elbow Disorder	Treatment with Evidence Rating/Recommendation Level		
	Recommended	No Recommendation	Not Recommended
Contusion	<p>Education (I)</p> <p>NSAIDs (I)</p> <p>Acetaminophen (I)</p> <p>Ice (I)</p> <p>Compression (I)</p> <p>Range-of-motion exercises (I)</p> <p>Avoidance of immobilization (I)</p>		
Lateral Epicondylalgia (Lateral Epicondylitis)	<p>Restrict patient work to tasks that do not involve high-force, stereotypical hand gripping or pinching or use of high-amplitude vibrating hand-held tools (I)</p> <p>Education (I)</p> <p>NSAIDs for acute, subacute, or chronic lateral epicondylalgia (B)</p> <p>NSAIDs for post-operative lateral epicondylalgia (I)</p> <p>Proton pump inhibitors for patients at substantially increased risk for gastrointestinal (GI) bleeding (A)</p> <p>Misoprostol for patients at substantially increased risk for GI bleeding (A)</p> <p>Sucralfate for patients at substantially increased risk for GI bleeding (B)</p> <p>H2 blockers for patients at substantially increased risk for GI bleeding (C)</p> <p>Patients with known cardiovascular disease or multiple risk factors for cardiovascular disease should have the risks and benefits of NSAID therapy for pain discussed (I)</p> <p>Acetaminophen or aspirin as first-line therapy for patients with cardiovascular disease risk factors (A)</p> <p>Acetaminophen for elbow pain, particularly for patients with contraindications for NSAIDs (I)</p> <p>Topical NSAIDs for acute, subacute, or chronic lateral epicondylalgia (B)</p> <p>Topical NSAIDs for post-operative lateral epicondylalgia (I)</p> <p>Opioids for select treatment of patients with post-operative lateral epicondylalgia (I)</p> <p>Tennis elbow bands, straps, and braces for acute,</p>	<p>Manipulation or mobilization for acute, subacute, or chronic lateral epicondylalgia (I)</p> <p>Massage, including friction massage, for acute, subacute, or chronic lateral epicondylalgia (I)</p> <p>Magnets and pulsed electromagnetic field for acute, subacute, or chronic lateral epicondylalgia (I)</p> <p>Acupuncture for acute, subacute, or post-operative lateral epicondylalgia (I)</p> <p>Biofeedback for acute, subacute, or chronic lateral epicondylalgia (I)</p> <p>Transcutaneous electrical nerve stimulation for acute, subacute, or chronic lateral epicondylalgia (I)</p> <p>Electrical nerve stimulation for acute, subacute, or chronic lateral epicondylalgia (I)</p> <p>Diathermy for acute, subacute, or chronic lateral epicondylalgia (I)</p> <p>Glucocorticosteroid</p>	<p>Opioids for acute, subacute, or chronic lateral epicondylalgia (I)</p> <p>Soft tissue mobilization for acute, subacute, or chronic lateral epicondylalgia (C)</p> <p>Extracorporeal shockwave therapy for acute, subacute, or chronic lateral epicondylalgia (A)</p> <p>Phonophoresis for acute, subacute, or chronic lateral epicondylalgia (C)</p> <p>Low-level laser therapy for acute, subacute, or chronic lateral epicondylalgia (B)</p> <p>Botulinum injections for acute, subacute, or chronic lateral epicondylalgia (I)</p> <p>Polidocanol injections for acute, subacute, or chronic lateral epicondylalgia (C)</p>

Elbow Disorder	subacute, or chronic lateral epicondylalgia (I) Treatment with Evidence Rating/Recommendation Level	injections for acute lateral epicondylalgia (I) No Recommendation Platelet-rich plasma	
	Recommended cock-up wrist braces for acute, subacute, or chronic lateral epicondylalgia (I)		Not Recommended
	<p>Home exercises for acute, subacute, chronic, or post-operative lateral epicondylalgia (I)</p> <p>Physical or occupational therapy for acute, subacute, chronic, or post-operative lateral epicondylalgia (C)</p> <p>Self-application of heat or cold for acute, subacute, chronic, or post-operative lateral epicondylalgia (I)</p> <p>Iontophoresis with administration of either glucocorticosteroids or NSAIDs for acute, subacute, or chronic lateral epicondylalgia (B)</p> <p>Ultrasound for acute, subacute, or chronic lateral epicondylalgia (C)</p> <p>Acupuncture for select patients with chronic lateral epicondylalgia (I)</p> <p>Glucocorticosteroid injections for subacute or chronic lateral epicondylalgia (B)</p> <p>Glucocorticosteroid injections using bupivacaine as an adjunct for subacute or chronic lateral epicondylalgia (C)</p> <p>Platelet-rich plasma injections for chronic lateral epicondylalgia (C)</p> <p>Autologous blood injections for chronic lateral epicondylalgia (C)</p> <p>Surgical lateral epicondylar release for chronic lateral epicondylalgia (I)</p> <p>Radiofrequency microtenotomy for chronic lateral epicondylalgia (C)</p>	<p>injections for acute or subacute lateral epicondylalgia (I)</p> <p>Autologous blood injections for acute or subacute lateral epicondylalgia (I)</p> <p>Periarticular sodium hyaluronate and glycosaminoglycan injections for chronic lateral epicondylalgia (I)</p> <p>Prolotherapy injections for acute, subacute, or chronic lateral epicondylalgia (I)</p> <p>Sonographically guided percutaneous tenotomy for acute, subacute, or chronic lateral epicondylalgia (I)</p>	
Medial Epicondylalgia (Medial Epicondylitis)	As there is almost no quality literature on medial epicondylalgia, treatment of this condition is by analogy to lateral epicondylalgia (see above) and should be considered "Insufficient Evidence" recommendations.		
Olecranon Bursitis	<p>Education (I)</p> <p>Soft padding of the elbow, soft elbow supports, and ace wraps (I)</p> <p>Modifying activities to avoid direct pressure over the olecranon and allowing time to reabsorb the fluid (I)</p> <p>Aspiration of a clinically infected or questionably infected bursa (I)</p> <p>Surgical drainage (I)</p> <p>Surgical resection of the bursa for chronic bursitis with</p>	<p>NSAIDs (I)</p> <p>Glucocorticosteroid injections (I)</p>	

Elbow Disorder	recurrent drainage (I) Treatment with Evidence Rating/Recommendation Level		
Elbow Fractures, Including Non-displaced Radial Head Fractures	<p>Recommended</p> <p>NSAIDs and acetaminophen to control pain (I)</p> <p>Elbow slings for non-displaced and occult radial head fractures (I)</p> <p>Casts for non-displaced and occult radial head fractures (I)</p> <p>Opioids for select patients with pain (I)</p> <p>Surgical fixation for displaced elbow fractures (I)</p> <p>Education, usually by physical or occupational therapists, for select patients needing education after cast removal (I)</p> <p>Physical or occupational therapy for select patients with functional debilities, or those unable to return to work after cast removal (I)</p>	No Recommendation	<p>Not Recommended</p> <p>Routine referral for physical or occupational therapy after cast removal for elbow fracture of otherwise healthy patients who are able to return to work (I)</p>
Elbow Dislocations	<p>Education (I)</p> <p>NSAIDs and acetaminophen (I)</p> <p>Opioids for select patients with pain (I)</p> <p>Posterior elbow splint and slings (I)</p> <p>Anesthetic, with or without opioid, intraarticular injection(s) either pre-reduction or post-reduction for pain management (I)</p> <p>General anesthesia to facilitate reduction in select patients (I)</p> <p>Surgery to repair elbow joints that either recurrently dislocate or are otherwise unstable after dislocation(s) (I)</p>		
Elbow Sprains	<p>Education (I)</p> <p>NSAIDs and acetaminophen (I)</p> <p>Opioids for select patients with pain from severe elbow sprains (I)</p> <p>Slings (I)</p>		
Biceps Tendinosis (or Tendinitis) and Tears/Ruptures	<p>Education (I)</p> <p>NSAIDs and acetaminophen (I)</p> <p>Opioids for select patients with pain from moderately severe to severe biceps tendinosis, particularly with nocturnal sleep disruption. Post-operative patients are also candidates. (I)</p> <p>Slings and splints for biceps tendinosis, ruptures, and post-operative patients (I)</p> <p>Range-of-motion transitioning to strengthening exercises</p>		



Elbow Disorder	for biceps tendinosis, ruptures, and post-operative patients (I)		
	Recommended Surgical repair of distal biceps rupture (I)	No Recommendation	Not Recommended
Triceps Tendinosis (or Tendinitis) and Tears/Ruptures	There are no quality studies for this disorder, thus treatment by analogy to biceps tendinosis and tears/ruptures is recommended (see above).		
Ulnar Neuropathies at the Elbow (including Condylar Groove-Associated Ulnar Neuropathy and Cubital Tunnel Syndrome)	<p>Removal from job tasks with repeated or sustained elbow hyperflexion (I)</p> <p>Education (I)</p> <p>Patients should be taught to sleep with elbows extended rather than flexed (I)</p> <p>Patients should avoid hyperflexed (&gt;90°) elbow postures at work or during avocational activities (I)</p> <p>Exercise for rehabilitation of patients with post-operative ulnar neuropathy at the elbow with significant deficits (I)</p> <p>NSAIDs and acetaminophen for postoperative pain management of ulnar neuropathy-related pain (I)</p> <p>Limited use of opioids for a few days to a couple weeks for select patients who have undergone recent ulnar neuropathy surgery, particularly if complications have occurred (I)</p> <p>Nocturnal elbow splinting or bracing for acute, subacute, or chronic ulnar neuropathies at the elbow (I)</p> <p>Ultrasound for acute, subacute, or chronic ulnar neuropathies (I)</p> <p>Simple decompression for patients who fail non-operative treatment for subacute or chronic ulnar neuropathies or patients who have emergent or urgent indications (e.g., acute compression due to fracture, arthritides or compartment syndrome with unrelenting symptoms of nerve impairment). (C)</p> <p>Anterior subcutaneous transposition for patients who fail non-operative treatment for subacute or chronic ulnar neuropathies or patients who have emergent or urgent indications (e.g., acute compression due to fracture, arthritides or compartment syndrome with unrelenting symptoms of nerve impairment). (I)</p> <p>Medial epicondylectomy for patients who fail non-operative treatment for subacute or chronic ulnar neuropathies or patients who have emergent or urgent indications (e.g., acute compression due to fracture, arthritides or compartment syndrome with unrelenting symptoms of nerve impairment). (I)</p>	<p>Exercises for acute, subacute, or chronic ulnar neuropathy at the elbow (I)</p> <p>Oral or injections (condylar groove or cubital tunnel) of glucocorticosteroids for acute, subacute, or chronic ulnar neuropathies at the elbow (I)</p> <p>Other vitamins for acute, subacute, or chronic ulnar neuropathies (I)</p> <p>Lidocaine patches for acute, subacute, or chronic ulnar neuropathies with pain (I)</p> <p>Topically administered ketamine for acute, subacute, or chronic ulnar neuropathies with pain (I)</p> <p>Acupuncture for acute, subacute, or chronic ulnar neuropathies at the elbow (I)</p> <p>Biofeedback for acute, subacute, or chronic ulnar neuropathies at the elbow (I)</p> <p>Manipulation and mobilization for acute, subacute, or chronic ulnar neuropathies at the elbow (I)</p> <p>Massage for acute, subacute, or chronic</p>	<p>NSAIDs and acetaminophen as a primary treatment for acute, subacute, or chronic ulnar neuropathies at the elbow (I)</p> <p>Routine use of opioids for acute, subacute, or chronic ulnar neuropathies at the elbow (I)</p> <p>Pyridoxine for routine treatment of acute, subacute, or chronic ulnar neuropathies in patients without vitamin deficiencies (I)</p> <p>Magnets for management of pain for acute, subacute, or chronic ulnar neuropathies (I)</p> <p>Low-level laser therapy for acute, subacute, or chronic ulnar neuropathies (I)</p> <p>Anterior submuscular transposition for subacute or chronic ulnar neuropathies (I)</p>

Elbow Disorder	Treatment with Evidence Rating/Recommendation Level	ulnar neuropathies at the elbow (I)	
	Recommended	No Recommendation Soft tissue massage for	Not Recommended
		acute, subacute, or chronic ulnar neuropathies at the elbow (I)  Iontophoresis for acute, subacute, or chronic ulnar neuropathies at the elbow (I)  Phonophoresis for acute, subacute, or chronic ulnar neuropathies at the elbow (I)	
Radial Nerve Entrapment (including Radial Tunnel Syndrome)	In the absence of quality evidence for treatment of these radiculopathies, it is recommended that the treatments for ulnar neuropathy at the elbow (see above) be used to infer treatment for radial neuropathies.		
Pronator Syndrome (Median Neuropathies in the Forearm)	In the absence of quality evidence for treatment of these radiculopathies, it is recommended that the treatments for ulnar neuropathy at the elbow (see above) be used to infer treatment for median neuropathies.		

Table 3. Summary of Recommendations for Ergonomic Interventions for Elbow Musculoskeletal Disorders with an Occupational Basis and Return-to-Work Programs

Recommended	No Recommendation	Not Recommended
<p>In settings with combinations of risk factors (e.g., high force combined with high repetition), ergonomic interventions are recommended to reduce risk factors for epicondylalgia (I)</p> <p>In settings with sustained or repeated hyperflexion of the elbow (&gt;90°), ergonomic interventions are recommended to reduce elbow flexion (I)</p> <p>Ergonomics training in moderate- or high-risk manufacturing settings (I)</p> <p>Return-to-work programs for treatment of subacute or chronic elbow musculoskeletal disorders, particularly for patients with significant lost time (I)</p>	Return-to-work programs for acute, severe elbow musculoskeletal disorders (I)	

#### Definitions:

##### Strength of Evidence Ratings

A = Strong evidence-base: Two or more high-quality studies.\*

B = Moderate evidence-base: At least one high-quality study or multiple moderate-quality studies\*\* relevant to the topic and the working population.

C = Limited evidence-base: At least one study of moderate quality.

I = Insufficient evidence: Evidence is insufficient or irreconcilable.

\*For therapy and prevention, randomized controlled trials (RCTs) or crossover trials with narrow confidence intervals and minimal heterogeneity. For diagnosis and screening, cross sectional studies using independent gold standards. For prognosis, etiology or harms, prospective cohort studies with minimal heterogeneity.

\*\*For therapy and prevention, well-conducted cohort studies. For prognosis, etiology or harms, well-conducted retrospective cohort studies or untreated control arms of RCTs.

#### Strength of Recommendations

Recommendation	Evidence Rating	Description of Category
Strongly Recommended	A	The intervention is strongly recommended for appropriate patients. The intervention improves important health and functional outcomes based on high quality evidence, and the Evidence-Based Practice Panel (EBPP) concludes that benefits substantially outweigh harms and costs.
Moderately Recommended	B	The intervention is recommended for appropriate patients. The intervention improves important health and functional outcomes based on intermediate quality evidence that benefits substantially outweigh harms and costs.
Recommended	C	The intervention is recommended for appropriate patients. There is limited evidence that the intervention may improve important health and functional benefits.
Insufficient - Recommended (Consensus-based)	I	The intervention is recommended for appropriate patients and has nominal costs and essentially no potential for harm. The EBPP feels that the intervention constitutes best medical practice to acquire or provide information in order to best diagnose and treat a health condition and restore function in an expeditious manner. The EBPP believes based on the body of evidence, first principles, or collective experience that patients are best served by these practices, although the evidence is insufficient for an evidence-based recommendation.
Insufficient - No Recommendation (Consensus-based)	I	The evidence is insufficient to recommend for or against routinely providing the intervention. The EBPP makes no recommendation. Evidence that the intervention is effective is lacking, of poor quality, or conflicting and the balance of benefits, harms, and costs cannot be determined.
Insufficient - Not Recommended (Consensus-based)	I	The evidence is insufficient for an evidence-based recommendation. The intervention is not recommended for appropriate patients because of high costs or high potential for harm to the patient.
Not Recommended	C	Recommendation against routinely providing the intervention. The EBPP found at least intermediate evidence that harms and costs exceed benefits based on limited evidence.
Moderately Not Recommended	B	Recommendation against routinely providing the intervention to eligible patients. The EBPP found at least intermediate evidence that the intervention is ineffective, or that harms or costs outweigh benefits.
Strongly Not Recommended	A	Strong recommendation against providing the intervention to eligible patients. The EBPP found high quality evidence that the intervention is ineffective, or that harms or costs outweigh benefits.

## Clinical Algorithm(s)

The following clinical algorithms are provided in the original guideline document:

- ACOEM Guidelines for Care of Acute and Subacute Elbow Disorders
- Initial Evaluation of Elbow Disorders
- Initial and Follow-up Management of Elbow Disorders

- Evaluation of Slow-to-Recover Patients with Elbow Disorders (Symptoms >4 Weeks)
- Surgical Considerations for Patients with Anatomic and Physiologic Evidence of Nerve Compression Coupled with Persistent Elbow Symptoms
- Further Management of Elbow Disorders

## Scope

### Disease/Condition(s)

Elbow disorders

### Guideline Category

Diagnosis

Evaluation

Management

Rehabilitation

Treatment

### Clinical Specialty

Family Practice

Internal Medicine

Orthopedic Surgery

Physical Medicine and Rehabilitation

Preventive Medicine

Sports Medicine

Surgery

### Intended Users

Advanced Practice Nurses

Allied Health Personnel

Health Care Providers

Health Plans

Nurses

Occupational Therapists

Physical Therapists

Physician Assistants

## Guideline Objective(s)

- To describe evidence-based best practices for key areas of occupational medical care and disability management
- To improve or restore the health of workers with occupationally related illnesses or injuries
- To improve the quality of occupational medical care and disability management

## Target Population

Adults with potentially work-related elbow disorders seen in primary care settings

## Interventions and Practices Considered

### Diagnosis/Evaluation

1. Medical history
2. Physical exam
3. Antibody testing
4. Elbow arthroscopy
5. Bone scans
6. Computerized tomography (CT)
7. C-reactive protein, erythrocyte sedimentation rate, and other non-specific inflammatory markers
8. Electrodiagnostic studies (EDS)
9. Magnetic resonance imaging (MRI)
10. X-ray
11. Ultrasound
12. Gram stain, culture and sensitivity

### Management/Treatment

1. Patient education
2. Activity and work modification
3. Medication
  - Non-steroidal anti-inflammatory drugs (NSAIDs)
  - Acetaminophen
  - Proton pump inhibitors
  - Misoprostol
  - Sucralfate
  - Histamine type 2 receptor blockers
  - Opioids
4. Physical methods
  - Compression
  - Avoidance of immobilization
  - Tennis elbow bands, straps, and braces
  - Cock-up wrist braces
  - Home exercise (range of motion, strength training)
  - Physical or occupational therapy
  - Self-application of heat or cold (ice)
  - Acupuncture
  - Elbow slings/splints
  - Casts

- Nocturnal elbow splinting or bracing

## 5. Iontophoresis

## 6. Ultrasound

## 7. Injections

- Glucocorticosteroid injections
- Platelet-rich plasma injections
- Autologous blood injections

## 8. Surgical therapy

- Surgical lateral epicondylar release
- Radiofrequency microtenotomy
- Surgical drainage
- Surgical release of the bursa
- Surgical fixation of displaced elbow fractures
- Simple decompression
- Medial epicondylectomy
- Anterior subcutaneous transposition

## 9. Ergonomic interventions

## 10. Return to work programs

1. Manipulation/mobilization
2. Massage
3. Magnets/pulse electromagnetic field
4. Biofeedback
5. Phonophoresis
6. Transcutaneous electrical nerve stimulation
7. Electrical nerve stimulation
8. Diathermy
9. Periarticular sodium hyaluronate and glycosaminoglycan injections
10. Prolotherapy injections
11. Vitamins
12. Lidocaine patches
13. Topically administered ketamine
14. Percutaneous tenotomy

- ## 1. Manipulation/mobilization

## 2. Massage

### 3. Magnets/pulse electromagnetic field

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## 7. Electrical nerve stimulation

## 8. Diathermy

## 9. Periarticular sodium hyaluronate and glycosaminoglycan injections

## 10. Prolotherapy injections

## 11. Vitamins

## 12. Lidocaine patches

### 13. Topically administered ketamine

#### 14. Percutaneous tenotomy

1. Pyridoxine
2. Low-level laser therapy
3. Extracorporeal shock wave therapy
4. Botulinum injections
5. Polidocanol injections
6. Anterior submuscular transposition

- ## 1. Pyridoxine

## 2. Low-level laser therapy

### 3. Extracorporeal shock wave therapy

#### 4. Botulinum injections

## 5. Polidocanol injections

## 6. Anterior submuscular transposition

- Sensitivity and specificity of diagnostic tests
- Rates of symptom alleviation and cure
- Time to return to work

## Methodology

## Methods Used to Collect/Select the Evidence

### Hand-searches of Published Literature (Primary Sources)

### Searches of Electronic Databases

## Description of Methods Used to Collect/Select the Evidence

Searches for evidence for the development of American College of Occupational and Environmental Medicine (ACOEM) evidence-based products and services primarily emphasize a search for high- or moderate-quality original studies. Primary databases searched from 1966 to 2011 were:

1. The National Library of Medicine's MEDLARS database (Medline) ([www.nlm.nih.gov](http://www.nlm.nih.gov) )
2. EBM Online ([www.bmjournals.com](http://www.bmjournals.com) )
3. The Cochrane Central Register of Controlled Trials ([www.cochrane.org/reviews/clibintro.htm](http://www.cochrane.org/reviews/clibintro.htm) )
4. TRIP Database ([www.tripdatabase.com](http://www.tripdatabase.com) )
5. CINAHL (nursing, allied health, physical therapy, occupational therapy, social services: <http://www.cinahl.com/wpages/login.htm> )
6. EMBASE ([www.embase.com/](http://www.embase.com/) )
7. PEDro ([www.pedro.fhs.usyd.edu.au/](http://www.pedro.fhs.usyd.edu.au/) )

### Ranking and Preliminary Screening of Studies

Primary sources selected for inclusion in the evidence base for ACOEM products and services are limited to those with the strongest apparent study design, pending quality rating. The strength and quality of study design are determined by ranking and rating of the studies according to accepted methods. Generally accepted ranking of study design for diagnostic testing and clinical treatment methods were modified by the Guideline Methodology Committee (GMC). Systematic reviews in general are not ranked as the best design in reality, as most reviews located during pilot testing of the Methodology, with the exception of many (but not all) Cochrane reviews, did not use systematic searches or quality assessments of included studies. The GMC also excluded level 4 evidence from consideration (case series, poor-quality cohort studies, poor-quality case-control studies, expert opinion without explicit critical appraisal, and expert opinion based on physiology, bench research, first principles). The focus was on the best-designed original studies, pending quality grading. For example, studies of diagnostic tests are generally limited to those compared to an acceptable gold standard, and those reporting sensitivity and specificity. Studies of clinical treatment methods are generally limited to randomized controlled trials or crossover trials. Additional literature was also reviewed when there was a paucity of higher-grade literature or if it was brought to Evidence-based Practice Panels (EBPP's) attention from interested parties.

To narrow the data discovered in the search to that which will be acceptable for further analysis and quality rating, researchers use additional preliminary screening criteria for original research.

### Criteria for Inclusion in Study Rating and Critical Analysis of Studies of Diagnosis/Clinical Assessment Methods

1. Evaluate the efficacy (i.e., clinical accuracy) of the assessment method (i.e., the "test") in a group that contains subjects both with and without the condition the test is intended to assess.
2. Be a prospective cohort study or an arm of a randomized controlled trial (RCT).
3. Compare the findings of the assessment method (test) to an adequate reference standard for all subjects (not just subjects who tested positive).

### Criteria for Inclusion in Study Rating and Critical Analysis of Studies of Treatment Efficacy

1. Evaluate a group of subjects with a representative spectrum of the clinical condition of interest.
2. Be a RCT evaluating clinical outcomes in a group receiving the intervention compared to a comparison group receiving either no intervention or a different intervention.
3. Evaluate functional outcomes that are important to a patient's overall health or well being or are important to society.

Searches are documented, listing the database searched, the search terms, article type and limits, the time frame searched (in this case, all years in the databases), the number of studies found, the number reviewed in detail, and the number included in the systematic analysis. Despite multiple database searches, many additional studies are discovered in exhaustive manual searches of article reference lists.

# Number of Source Documents

Not stated

# Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

# Rating Scheme for the Strength of the Evidence

Strength of Evidence Ratings

A = Strong evidence-base: Two or more high-quality studies.\*

B = Moderate evidence-base: At least one high-quality study or multiple moderate-quality studies\*\* relevant to the topic and the working population.

C = Limited evidence-base: At least one study of moderate quality.

I = Insufficient evidence: Evidence is insufficient or irreconcilable.

\*For therapy and prevention, randomized controlled trials (RCTs) or crossover trials with narrow confidence intervals and minimal heterogeneity. For diagnosis and screening, cross sectional studies using independent gold standards. For prognosis, etiology or harms, prospective cohort studies with minimal heterogeneity.

\*\*For therapy and prevention, well-conducted cohort studies. For prognosis, etiology or harms, well-conducted retrospective cohort studies or untreated control arms of RCTs.

# Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

# Description of the Methods Used to Analyze the Evidence

Study Assessment and Quality Rating

Studies are first abstracted into evidence tables for easier assessment. See Appendix B in the methodology companion (see the "Availability of Companion Documents" field) for a sample of an evidence table for treatment studies. Each study is formally graded for quality using a modification of the most recent assessment scheme proposed by the Cochrane Collaboration Back Group, as shown in the table below. The studies are quality rated using a 0, 0.5, 1 grade for each item, where 0 = does not fulfill the requirement; 0.5 = partially fulfills the requirement and 1 = entirely fulfills the requirement. A study with a score less than 4.0 is rated as a poor-quality study; a study with a score between 4.0 and 7.5 is rated as a moderate-quality study. A study with a score of 8.0 or greater is rated as a high-quality study.

Rating Criteria for Randomized Controlled Trials of Treatment Studies

Criterion	Description
Randomization	Assessment of the degree that randomization was both reported to have been performed and successfully achieved through analyses of comparisons of variables between the treatment and control groups.
Treatment allocation concealed	Concealment of the allocation of patients to various arms of the study from all involved, including patients, clinicians, and researchers
Baseline	Measures how comparable the baseline groups are (e.g., age, gender, prior treatment)



Criterion	Description
Patient blinded	The patient is not aware which group he or she is in
Provider blinded	The provider is not aware which treatment he or she is delivering
Assessor blinded	The researcher is not aware which group the results apply to
Co-interventions avoided	The degree to which the study design avoided multiple interventions at the same time
Compliance acceptable	Measures the degree of noncompliance with the treatment protocol
Dropout rate	Measures the dropout rate at different periods of time
Timing of assessments	Assessments and reassessments should be performed at the same time from inception for all study groups
Analyzed by intention to treat	Whether the study data was analyzed with an "intention to treat" analysis

## Methods Used to Formulate the Recommendations

Expert Consensus

Expert Consensus (Nominal Group Technique)

## Description of Methods Used to Formulate the Recommendations

Each recommendation includes citations of the specific scientific literature which supports the recommendation. The recommendations explicitly consider the health benefits, side effects, and risks of the proposed recommendation. Recommendations include the data elements described below.

Content of Recommendations for Diagnostic Testing or Treatment

1. The diagnoses for which the test or treatment is indicated
2. The specific indications for the test or treatment
3. The point in the time course of the problem for which it is appropriate
4. Prior conservative treatment that should be tried first
5. Relative and absolute contraindications to the test or procedure
6. The number of tests or procedures that are appropriate at a given time in the course of the problem
7. The potential benefits of the test or procedure
8. The potential harms, including effects on disability and return to work

The Evidence-based Practice Panels (EBPPs) for each topic area review and discuss draft practice recommendations from the research staff that includes a review of the quality evidence, evidence tables, and summaries. The strength of evidence rating is confirmed by the EBPP responsible for the topic, with review by the Guideline Methodology Committee (GMC). EBPP members may present additional comments related to their clinical opinions and experience for panel consideration. If a unanimous decision is not possible, an EPPP may vote on the rating of the strength of the evidence to determine a consensus. Dissenters to the consensus may draft minority opinions about the strength of evidence. In practice, this has not happened as recommendations have been unanimous.

Formulation of recommendations requires clinical judgment as well as a full evaluation and consideration of the available high-quality evidence. To aid in framing recommendations, the GMC developed a list of "First Principles" based on the Hippocratic Oath ("First Do No Harm"), medical logic, appropriate sequencing and case management, shared decision-making, support of functional recovery, and relative cost-effectiveness. The First Principles are defined in Table 7 in the methodology companion (see the "Availability of Companion Documents" field). When there is insufficient high-quality evidence of effectiveness or efficacy, or the high-quality evidence is conflicting, and to guide recommendations for alternative tests or treatments when there are several options, these principles are used to guide group decision-making.

The EBPPs then assign a Strength of Recommendation to each recommendation. If a consensus cannot be reached on the recommendation or strength of recommendation, the EBPPs may use nominal group voting if agreement is not possible in the discussion. Once a consensus is reached, the EBPPs will finalize the language and strength rating of the recommendation. If needed and material, a minority opinion can be appended to the recommendation.

## Rating Scheme for the Strength of the Recommendations

### Strength of Recommendations

Recommendation	Evidence Rating	Description of Category
Strongly Recommended	A	The intervention is strongly recommended for appropriate patients. The intervention improves important health and functional outcomes based on high quality evidence, and the Evidence-Based Practice Panel (EBPP) concludes that benefits substantially outweigh harms and costs.
Moderately Recommended	B	The intervention is recommended for appropriate patients. The intervention improves important health and functional outcomes based on intermediate quality evidence that benefits substantially outweigh harms and costs.
Recommended	C	The intervention is recommended for appropriate patients. There is limited evidence that the intervention may improve important health and functional benefits.
Insufficient - Recommended (Consensus-based)	I	The intervention is recommended for appropriate patients and has nominal costs and essentially no potential for harm. The EBPP feels that the intervention constitutes best medical practice to acquire or provide information in order to best diagnose and treat a health condition and restore function in an expeditious manner. The EBPP believes based on the body of evidence, first principles, or collective experience that patients are best served by these practices, although the evidence is insufficient for an evidence-based recommendation.
Insufficient - No Recommendation (Consensus-based)	I	The evidence is insufficient to recommend for or against routinely providing the intervention. The EBPP makes no recommendation. Evidence that the intervention is effective is lacking, of poor quality, or conflicting and the balance of benefits, harms, and costs cannot be determined.
Insufficient - Not Recommended (Consensus-based)	I	The evidence is insufficient for an evidence-based recommendation. The intervention is not recommended for appropriate patients because of high costs or high potential for harm to the patient.
Not Recommended	C	Recommendation against routinely providing the intervention. The EBPP found at least intermediate evidence that harms and costs exceed benefits based on limited evidence.
Moderately Not Recommended	B	Recommendation against routinely providing the intervention to eligible patients. The EBPP found at least intermediate evidence that the intervention is ineffective, or that harms or costs outweigh benefits.
Strongly Not Recommended	A	Strong recommendation against providing the intervention to eligible patients. The EBPP found high quality evidence that the intervention is ineffective, or that harms or costs outweigh benefits.

## Cost Analysis

Published cost analyses were reviewed.

## Method of Guideline Validation

### Clinical Validation-Pilot Testing

External Peer Review

Internal Peer Review

## Description of Method of Guideline Validation

Internal Quality Review

The Guideline Methodology Committee (GMC) assigns a committee member to each Evidence Based Practice Panel (EBPP) as a methodology consultant to assist with adherence to this methodology. The GMC reviews all recommendations for which there are questions about consistency with the defined methodology. If the GMC determines that the approved methodology has not been followed, leading to illogical or untenable recommendations, the GMC engages in direct discussions with the EBPP to reach agreement on revision. If there is no agreement or revision, then the matter will be considered by the American College of Occupational and Environmental Medicine (ACOEM) Board of Directors when the document is submitted for Board review.

External Review

ACOEM conducts external peer review of the ACOEM Occupational Medicine Practice Guidelines (APGs) and periodic revisions to 1) assure that all relevant high-quality scientific literature has been found, 2) assure that the important evidence from the relevant scientific literature relevant has been accurately interpreted, 3) solicit opinions on whether the findings and recommendation statements are appropriate and consistent with the evidence, and 4) obtain general information on the conclusions and presentation of materials from external topic experts. Professional and patient organizations, as well as panel members, ACOEM Board of Directors, etc., are invited to nominate external peer reviewers.

Peer reviewers are asked to comment on the completeness of the scientific literature evaluation in their topic area, the clarity and technical accuracy of the APGs evaluation and summary of the evidence, and the appropriateness of the Guideline findings and recommendation statements.

Stakeholder Input

In a cyclical manner, ACOEM will seek stakeholder input to understand the needs and preferences of those who may utilize or be affected by the use of clinical practice guidelines in workplace settings and in the workers' compensation system. ACOEM solicits input from clinicians, health care systems, workers or patients, employers, utilization reviewers, case managers, insurers and third party administrators, attorneys, regulators, and policy makers through a variety of mechanisms. Stakeholders will be asked for comments about their experience using existing clinical practice guidelines and related products and their suggestions for future improvements. They are also asked for input on the use of clinical practice guidelines in clinical care, case management, claim administration, claim adjudication, and in the development of policies and regulations.

To ensure editorial independence in the development process, the stakeholder groups will be asked for input about the APGs, but will not be informed of panel deliberations or shown drafts of practice recommendations before the formal release of the documents. In some cases, a member of a stakeholder group may participate as a member of a Guideline EBPP or may participate in peer review or pilot testing. However, all individuals involved in the APGs development, peer review, and pilot testing are asked to keep all information about the panel's deliberations and conclusions confidential until the APGs are formally released.

Pilot Testing

The guidelines are pilot tested to determine if the recommendations are clear, easy to use, and are generally useful. Pilot testers are not asked if they think the recommendations or process for development was appropriate.

Review by the GMC and the ACOEM Board of Directors

During the entire evidence-based product development process, the GMC will work with the Panels, editors, and research staff to ensure that the evidence-based product methodology is being followed, both in the literature evaluation process and development of conclusion and recommendation statements. The Board of Directors has an opportunity to comment on the Guidelines during the external review period. Their comments are reviewed by the Panel and any necessary changes are made to the Guidelines.

## Evidence Supporting the Recommendations

### Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

## Benefits/Harms of Implementing the Guideline Recommendations

### Potential Benefits

- Accurate assessment and diagnosis of the patient's medical condition and specific elbow disorder
- Improved symptoms, including pain, functionality, and disability
- Return-to-work programs are thought to reduce morbidity and improve function.

### Potential Harms

- Risks and complications of surgical procedures and imaging studies (e.g., infection, radiation)
- False-positive and false-negative results of diagnostic procedures
- Opioids cause significant adverse effects – poor tolerance, constipation, drowsiness, clouded judgment, memory loss, and potential misuse or dependence have been reported in up to 35% of patients. Quality trials report that approximately 20% to 75% of patients are unable to tolerate these medications. Before prescribing opioids, patients should be informed of these potential adverse effects and cautioned against operating motor vehicles or machinery. There are major concerns regarding adverse effects of opioids including mortality.
- Some patients may experience local reactions such as skin irritation, redness, pain, or sores when using lidocaine patches.
- The risk of infectious complications underscore caution about glucocorticoid injections as there is a potential to create a septic bursitis which then often requires surgical drainage.
- Prolonged use of slings or splints is believed to result in reduced ranges of motion and other complications such as adhesive capsulitis.
- Injections can introduce an infection if one is not present.
- Excessive stretching however should generally be avoided during the acute healing phase. Heavy or moderately heavy forceful use should also be avoided in the acute healing phase.

## Contraindications

### Contraindications

- Contraindications to magnetic resonance imaging (MRI) include implanted metallic-ferrous devices and significant claustrophobia.
- Aggressive stretching may be contraindicated if symptoms are aggravated.

## Qualifying Statements

### Qualifying Statements

The American College of Occupational and Environmental Medicine (ACOEM) provides this segment of guidelines for practitioners and notes that decisions to adopt particular courses of actions must be made by trained practitioners on the basis of the available resources and the particular circumstances presented by the individual patient. Accordingly, the ACOEM disclaims responsibility for any injury or damage resulting from actions taken by practitioners after considering these guidelines.

## Implementation of the Guideline

### Description of Implementation Strategy

An implementation strategy was not provided.

## Implementation Tools

Clinical Algorithm

Mobile Device Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

## Institute of Medicine (IOM) National Healthcare Quality Report Categories

### IOM Care Need

Getting Better

Living with Illness

### IOM Domain

Effectiveness

Patient-centeredness

## Identifying Information and Availability

### Bibliographic Source(s)

Elbow disorders. In: Hegmann KT, editor(s). Occupational medicine practice guidelines. Evaluation and management of common health problems and functional recovery in workers. 3rd ed. Elk Grove Village (IL): American College of Occupational and Environmental Medicine (ACOEM); 2012. p. 1-169. [535 references]

### Adaptation

Not applicable: The guideline was not adapted from another source.

### Date Released

1997 (revised 2012)

### Guideline Developer(s)

American College of Occupational and Environmental Medicine - Medical Specialty Society

### Source(s) of Funding

## Guideline Committee

Evidence-based Practice Elbow Panel

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*Research Grants/Other Support*—None

*Financial/Non-Financial Conflict of Interest*—None

## Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: American College of Occupational and Environmental Medicine (ACOEM). Elbow disorders. Elk Grove Village (IL): American College of Occupational and Environmental Medicine (ACOEM); 2007. 67 p. [122 references]

## Guideline Availability

Electronic copies: To order a subscription to APG-I, the online version of the Guidelines, call 847-818-1800 or visit <http://www.acoem.org/apg-i.aspx> .

Print copies are available from the American College of Occupational and Environmental Medicine (ACOEM), 25 Northwest Point Boulevard, Suite 700, Elk Grove Village, IL 60007 by calling 847-818-1800 or order online at <http://www.acoem.org/PracticeGuidelines.aspx>

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Subscriptions to ACOEM's Practice Guidelines App are available for iPhone/iPod and iPad interfaces from the [iTunes Web site](#)

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## Availability of Companion Documents

The following is available:

- Methodology for the update of the occupational medicine practice guidelines, 2nd edition. Elk Grove Village (IL): American College of Occupational and Environmental Medicine (ACOEM); 2008. Available from the [ACOEM Web site](#) .

## Patient Resources

None available

## NGC Status

This NGC summary was completed by ECRI on May 31, 2006. The information was verified by the guideline developer on November 3, 2006. This NGC summary was updated by ECRI Institute on July 23, 2007. The updated information was verified by the guideline developer on August 15, 2007. This summary was updated by ECRI Institute on January 15, 2010 following the U.S. Food and Drug Administration (FDA) advisory on Voltaren Gel. This NGC summary was updated by ECRI Institute on December 3, 2012. The updated information was verified by the guideline developer on December 14, 2012. This summary was updated by ECRI Institute on October 28, 2013 following the U.S. Food and Drug Administration advisory on Acetaminophen. This summary was updated by ECRI Institute on September 18, 2015 following the U.S. Food and Drug Administration advisory on non-aspirin nonsteroidal anti-inflammatory drugs (NSAIDs). This summary was updated by ECRI Institute on June 2, 2016 following the U.S. Food and Drug Administration advisory on Opioid pain medicines.

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